



CLUSTERS IN THE CARIBBEAN:

What could be their role in enhancing productivity?

Roberta Rabbellotti
Università di Pavia, Italy

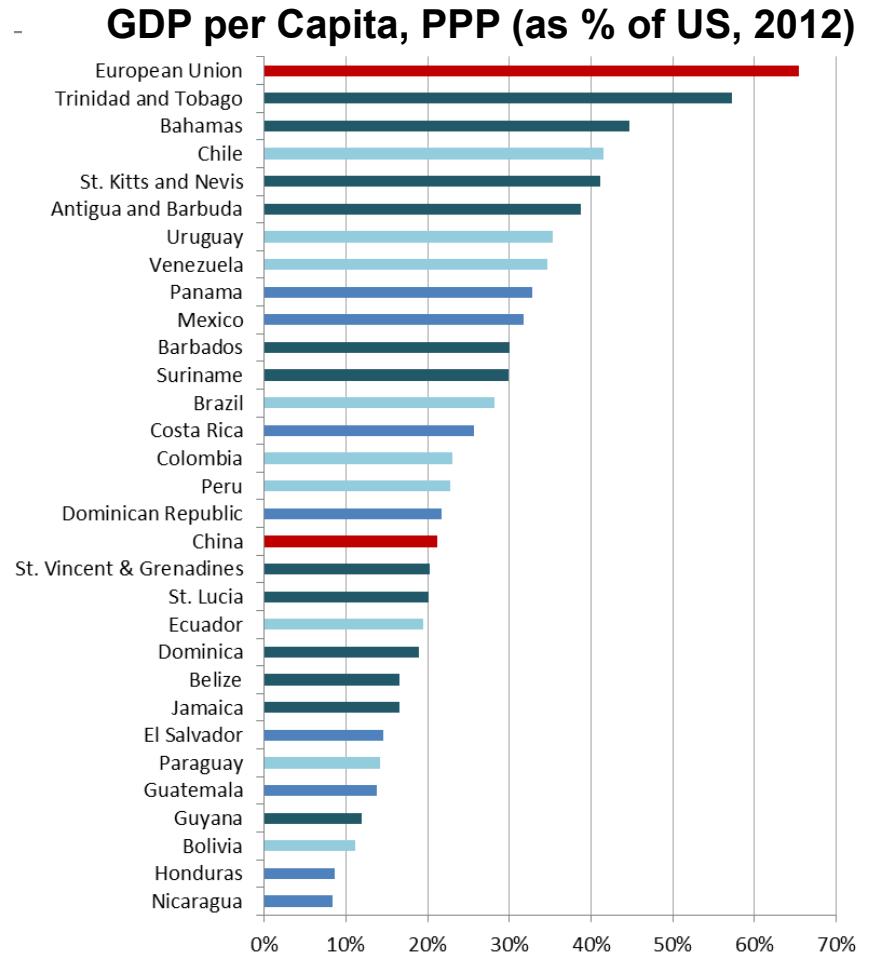
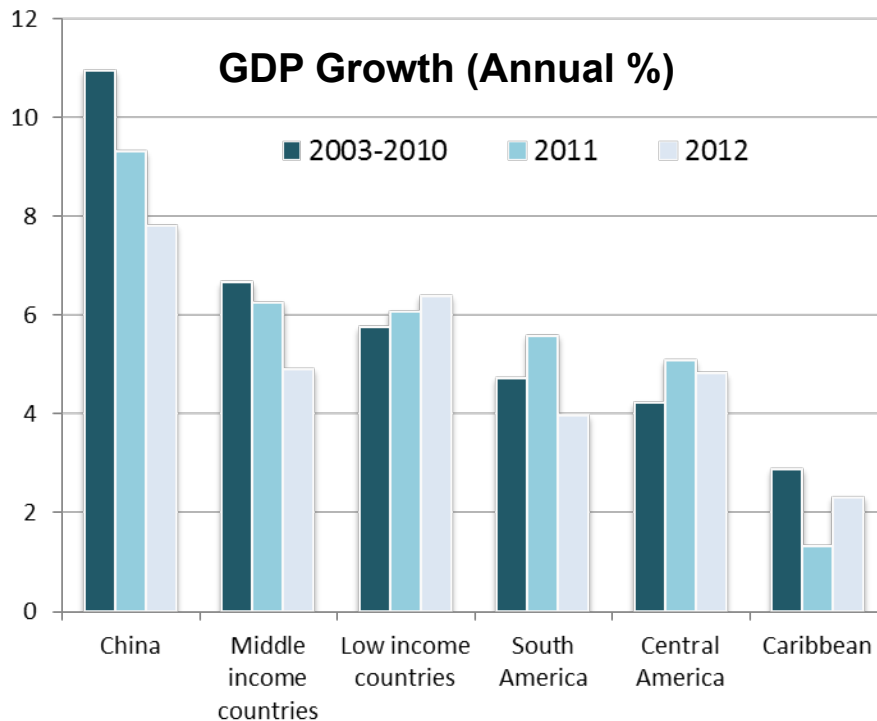


In partnership with



The LAC context

- Boosted by external factors, LAC saw relatively strong growth over the past decade, but growth remained weaker than dynamic East Asian economies.
- Even with average growth rates of 6.5% between 2004 and 2008, GDP/ capita still remains at about 1/4 of US levels.

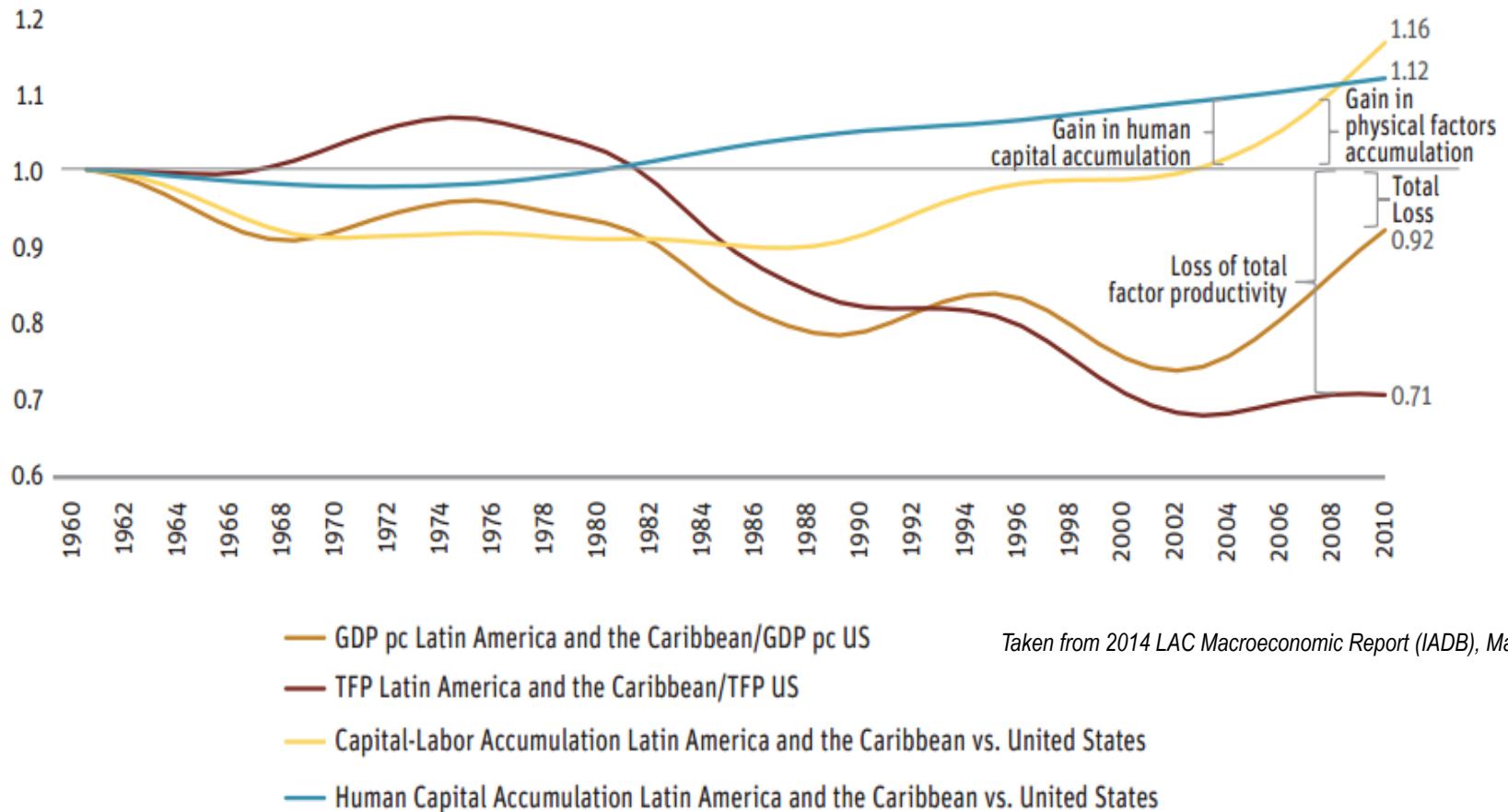


Economic Growth and Productivity

- Economic growth largely depends on the dynamics of productivity.
- This is well documented by several studies (e.g. Kehoe and Prescott, 2002, Solimano and Soto, 2006)
- The positive correlation between output and productivity growth tends to be stronger the longer is the time period considered.

Long-term Growth Depends on Increased Productivity

GDP per Capita Gap Decomposition (1960=1)



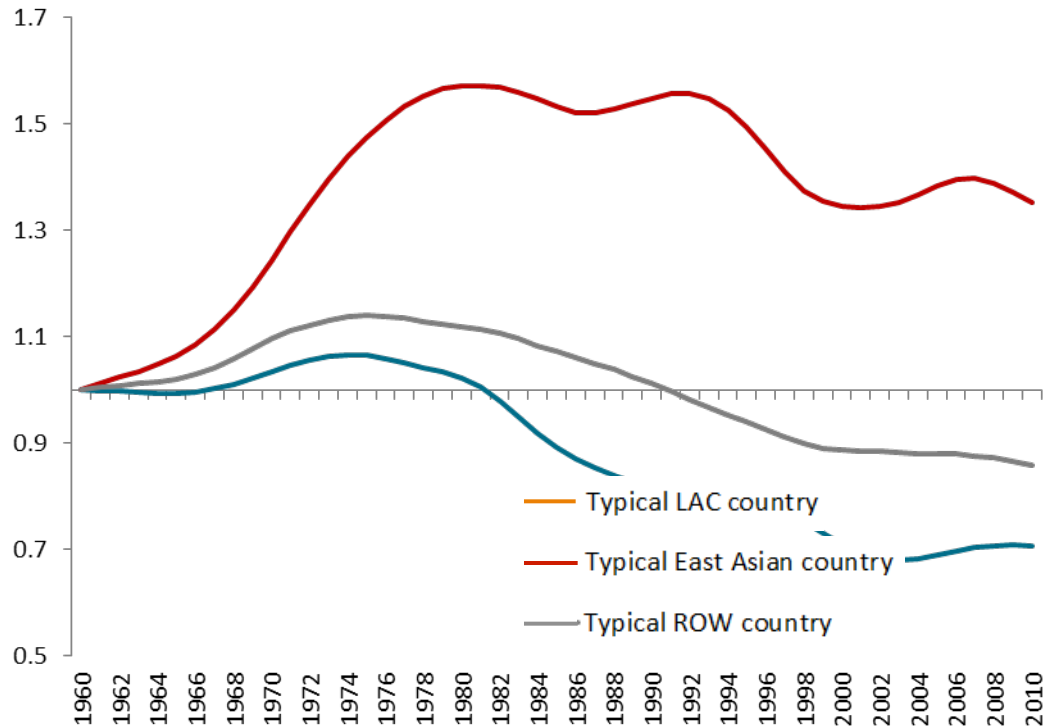
Taken from 2014 LAC Macroeconomic Report (IADB), March 2014

Source: Penn World Table 8.0 (2013), Barro-Lee Dataset (2013) and authors' calculations.

In LAC growth is due to factors accumulation rather than increases in productivity.

Stagnant Productivity

- Index of Productivity Relative to US (1960=1)



Over the past 30 years, LAC has seen relative declines in productivity growth, although performance varies by country, especially when compared to East Asian economies.

Micro Sources of Productivity Growth

- Efficiency gains that occur **within firms**, due to better production methods, organization, innovation at the plant-level, learning and capability development,
- Efficiency gains derived from the **reallocation of resources from less productive firms to more productive ones**, due to competition and the processes of (Schumpeterian) creation and destruction through which efficient firms expand, use larger shares of factors and push less efficient firms out of the market, and through the **entry (exit)** or more (less) efficient firms;
- Efficiency gains derived from **reallocation of resources across sectors**: when labor and other resources move from less productive to more productive activities, the economy grows even without productivity growth *within* sectors.
 - **“Structural change”** in LAC in the “wrong” direction, with resources shifting to lower-productivity sectors (McMillan and Rodrik, 2011).

A cluster in a nutshell

- The baseline definition of cluster contemplates the co-existence of two main characteristics: the **concentration of firms in a spatially bounded area** and **their specialization in the same or related industries**;
- They can be populated mainly by SMEs firms (**Marshallian clusters**) or by a mix of SMEs and a few leading firms (**Hub-and-Spoke clusters**);
- Firms located in clusters can benefit from *collective efficiency*:
 - **External economies** such as specialised labour market, knowledge circulation, facilitated access to inputs, customer attraction;
 - **joint actions**: horizontal and vertical cooperation (i.e. joint purchase inputs, joint trade participation).

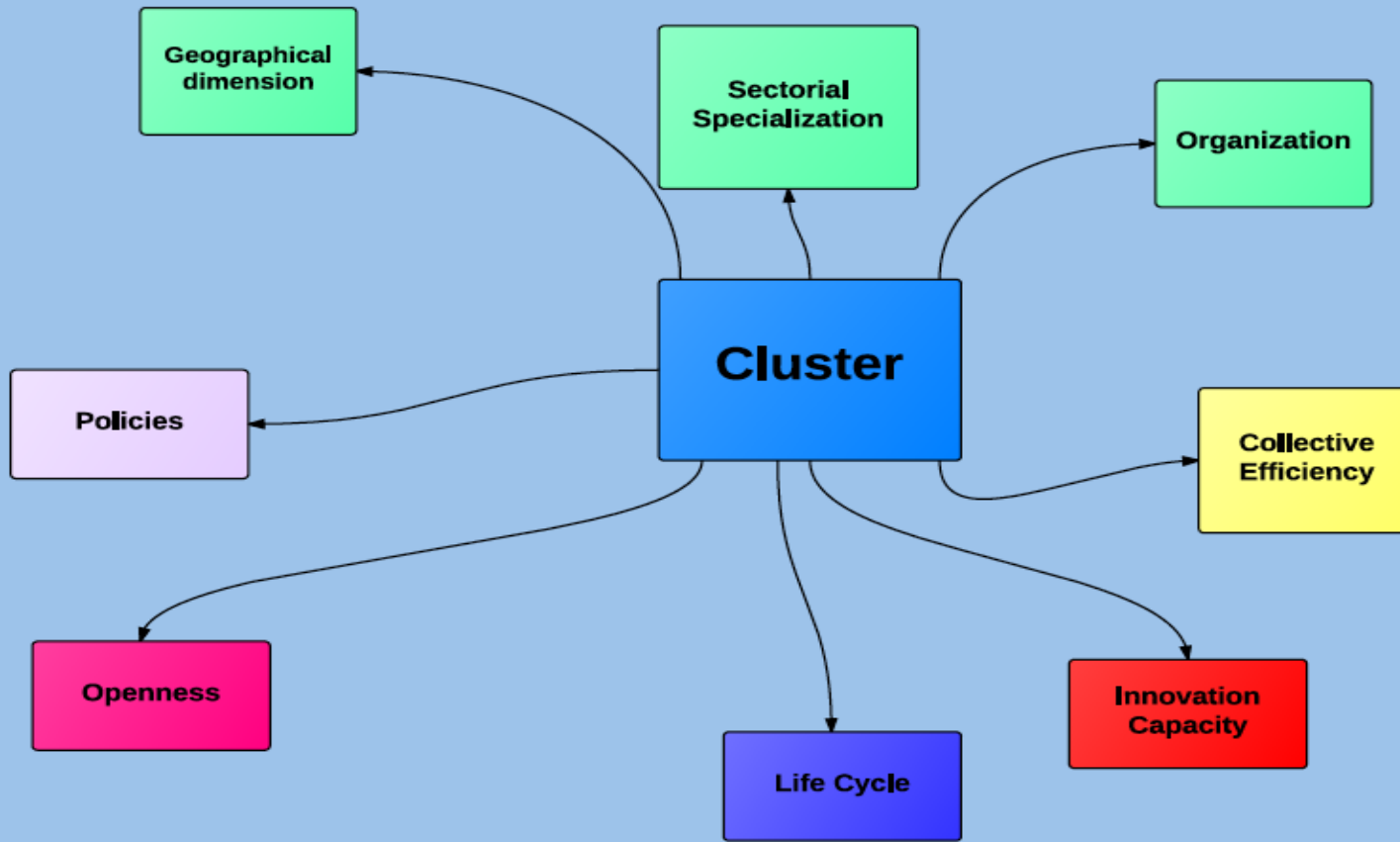
How clusters can enhance productivity growth?

- ① Clusters facilitate the emergence of **new promising industries** (e.g. creative industries, business services, non traditional agricultural products, aquaculture, niche tourism);
- ② In clusters firms take advantage of **collective efficiency** which facilitates better organization, innovation, learning and capability development;
- ③ In clusters, **external connections**, through multinationals or within global value chains, are also key to access knowledge and acquire capabilities needed for being competitive in the international markets with a positive impact on productivity.

The universe of the study

- 32 Caribbean clusters;
- Sectors: natural resources based industries, comprising agriculture, agro-processing, forestry, aquaculture and energy; manufacturing; and services, embracing tourism and creative industries;
- Countries: Barbados, Belize, Dominica, Grenada, Guyana, Jamaica, St-Lucia, St-Vincent & Grenadines, Suriname, Trinidad and Tobago.

The Six Dimensions of Clusters



How clusters have been classified

- The 32 clusters have been carefully analyzed along the six cluster dimensions that we consider influencing their competitiveness;
- Each dimension has been assessed on qualitative grounds – i.e. based on a very detailed analysis of the text, we have measured each dimension quantitatively (typically using Likert scales or other categorical classifications).

The main findings in details

- ***Sectorial dimension***: predominance of the **tertiary industry** (tourism, creative industries, business and financial services) and exploitation of natural resources, with only two clusters exclusively specialized in manufacturing;
- ***Geographical dimension***: half of the clusters are ***national***. The *local* dimension is predominant in agricultural clusters and in tourism. *Urban* clusters are in the service industry. **Only 4 inter-Caribbean clusters**;
- ***Organizational structure***: Many, very diverse, ***Marshallian clusters***. 5 H&S clusters in which a multinational is the hub. Only one cluster has been classified as *survival*.

Collective Efficiency

- **External Economies:**

- *Input availability* is key in natural resource clusters (i.e. energy industry in Trinidad and Tobago and aquaculture in Guyana, Belize and Jamaica);
- *Information sharing* is in general very good;
- Concerning *market access*, the poor situation of infrastructure in many clusters represents an obstacle, nullifying the possible advantage deriving from clustering;

- **Joint Action:**

- **Horizontal Cooperation** is diffused (i.e. in the aquaculture clusters for the need to address the environmental impact);
- **Vertical cooperation**: examples are in the field of logistics in aquaculture clusters and in non traditional agro products in Guyana.

Innovation Capacity and Openness

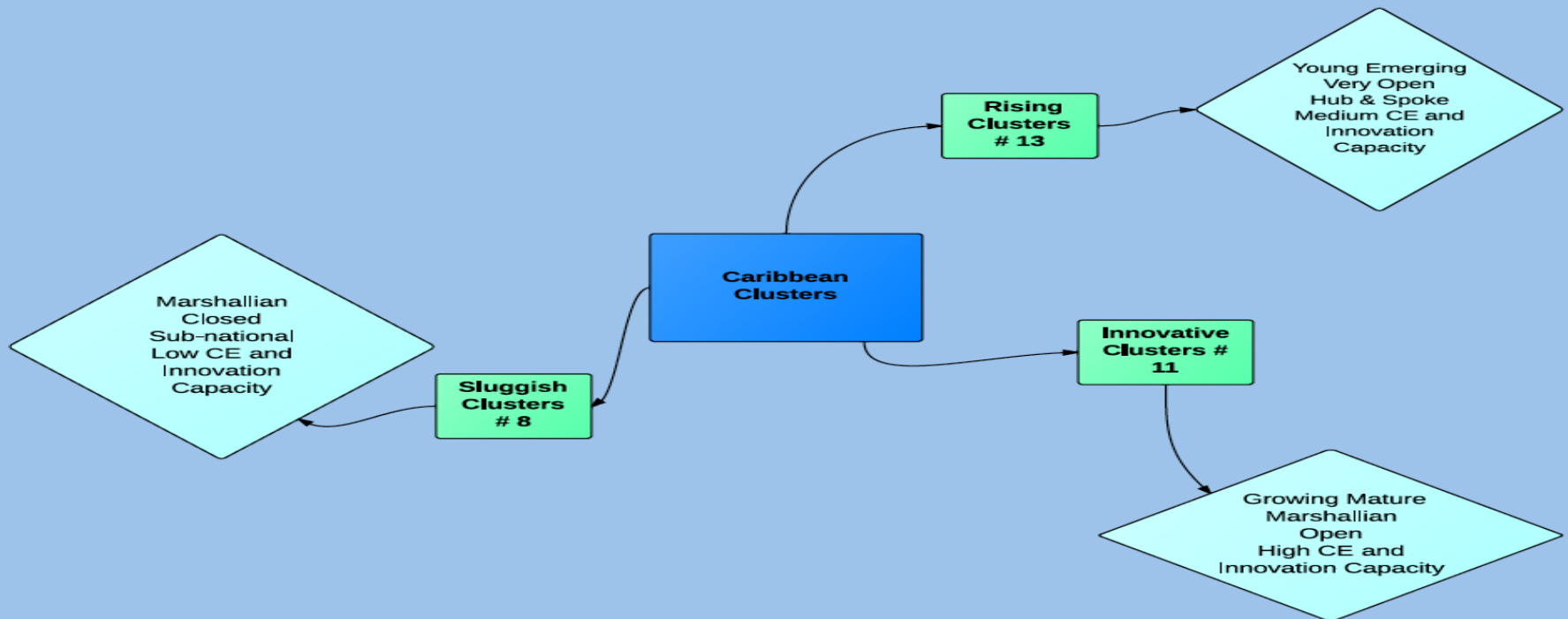
- *Knowledge base*: important elements are the presence of leading companies and of skilled people;
- *Intra-cluster knowledge system*: labor mobility is key;
- *Extra-cluster knowledge sources*: hub companies are important. Business associations plays a crucial role and links with suppliers can also be key;
- The *local presence of MNCs and/or the involvement in GVC* is critical for knowledge acquisition and export orientation in agro clusters as well as in the creative clusters, in forestry and in rum production;
- *Regional market* is important in the cases of the maritime, financial and business services clusters in Trinidad.

Cluster Policies

- About 20% of the clusters analyzed for this report are *spontaneous*, which means that their emergence and further development have not been stimulated by specific cluster policies (e.g. gold jewelry in Guyana and pottery in T&T);
- *Inception policies*: trust building, training and capacity building;
- *Development policies*:
 - support in information, communication and technology;
 - education and training;
 - infrastructure improvement;
 - setting of a business favorable context (i.e. regulations about intellectual property rights);
 - initiatives aimed at building and strengthening the external connections of the clusters.

A typology of clusters

- Through cluster analysis – a multivariate statistical technique that serves to identify different groups of similar actors - we have identified three groups of clusters:



3 groups of clusters: their features

Type of Cluster (# total)	Names and # of the clusters	Geographical Dimension (# of clusters)	Organizational Structure (# of clusters)	Collective Efficiency (Average Value)		Innovation Capacity (Average Value)	Openness (Average Value)	Stage of Life Cycle (# of clusters)	Policy (# of clusters)
				EE	JA				
Rising Clusters (13)	1.Guyana (Non-Trad Agr) 2.Grenada (Nutmeg) 5.Guyana (Coc Water) 10.Jamaica (Orn. Fish) 14.Inter-Carib (Rum) 15.Guyana (Fishing) 16Guyana (Birding) 19.Jamaica (Treas B.) 20Grenada (Geo-tour) 21.Suriname (Up S R) 22.Inter-Carib (Animat) 23.Barbados (Multimed) 32Inter-Carib (Mar. serv)	Local 3 Urban 1 National 5 Inter-Car 3 Local/Inter-C 1	Marshallian 8 Hub & Spoke 5 Survival 0	2.38	3.77	2.46	3.46	Emergence 6 Growth 6 Sustainment 1 Decline 0	Spontaneous 2 Pol for Incep 3 Pol for Dev 5 Pol for Inc & Dev 0 Spont. + Pol for Dev 3
Sluggish Clusters (8)	3.T&T (Agro products in Felicity) 4.T&T (Agro products in Jerningham) 7.Guyana (For & Wood 13.Guyana (Gold Jew) 17.T&T (Tourism in Carapichaima) 18.T&T (Tourism) 25.T&T (Pottery) 26.T&T (Retail)	Local 4 Urban 1 National 3 Inter-Car 0 Local/Inter-C 0	Marshallian 7 Hub & Spoke 0 Survival 1	2.50	2.50	1.75	1.38	Emergence 1 Growth 3 Sustainment 3 Decline 1	Spontaneous 3 Pol for Incep 1 Pol for Dev 3 Pol for Inc & Dev 1 Spont. + Pol for Dev 0
Innovative Clusters (11)	6.T&T (Food sustain.) 8.Guyana (Aquacult.) 9.Belize (Shrimp) 11.T&T (Oil) 12.T&T (Point Lisas I E) 24.T&T (Music, Film, etc) 26.T&T (Mar. Serv.) 27.T&T (Financ. Serv.) 28.T&T (Business Serv) 30.Jamaica (ICT/Bus) 31.Jamaica (Print & Pack)	Local 1 Urban 2 National 8 Inter-Car 0 Local/Inter-C 0	Marshallian 11 Hub & Spoke 0 Survival 0	4.45	3.91	4.27	3.09	Emergence 0 Growth 9 Sustainment 2 Decline 0	Spontaneous 1 Pol for Incep 0 Pol for Dev 5 Pol for Inc & Dev 2 Spont. + Pol for Dev 3

Some evidence on the 3 groups

- *The **Rising Clusters*** and the ***Innovative Clusters***, share some common key features.
 - They are **open to foreign markets** and **maintain external channels** (i.e. via MNCs of GVCs), through which they can tap into knowledge and technologies;
 - Clusters' firms take advantage of **strong degree of collective efficiency** (i.e. local availability of a specialized labor market or the presence of collective projects for sharing transportation costs, adopting international standards, introducing environmental best practices or jointly selling products in the international markets);
- ***Innovative Clusters*** display a **much higher innovative capacity** as compared to *Rising Clusters*, which tend to be younger and therefore have accumulated lower technological capabilities;
- ***Sluggish Clusters*** are rather **closed systems**, often lacking connections to external channels and access to international markets. Many of them show a **low degree of collective efficiency** and **poor innovative capacity**.

Policy implications

- *Rising Clusters* should focus on:
 - fostering innovation, which is a weak area for this kind of clusters;
 - helping the transition of emerging clusters to a growth phase;
 - supporting the consolidation of leading actors;
- *Innovative clusters* should not be sustained at large (not least because they are already successful), but their best ideas or initiatives should be assessed by funding bodies to further promote skills and to achieve very ambitious targets. In these clusters, competition for funding should be very tough, with only a few exceptional projects being funded while the funding per winning project should be generous;
- *Sluggish Clusters* should:
 - strengthen local joint action;
 - enhance openness for the access to valuable resources like knowledge and technologies;
 - build innovative capabilities.

5 concluding remarks

- ① Cluster activity is very intense in the region;
- ② The Caribbean clusters are very diverse on several key dimensions, as clearly shown with the identification of three groups – *Rising*, *Innovative* and *Sluggish* Clusters;
- ③ Supporting policies should be differentiated to address and reinforce different strenghts and weaknesses in clusters;
- ④ In Caribbean clusters, there are already a variety of supporting interventions implemented, some of which do represent good practice examples;
- ⑤ Existing dynamic clusters do represent very good examples of how productivity can be enhanced through a collective effort. The challenge is **to extend the approach at an intra-Caribbean scale, with an open eye for key external connections.**

Are clusters relevant for the future development in the Caribbean? YES, for 4 reasons

- ① In clusters, there are new promising industries flourishing thanks to a combination of private entrepreneurial spirits and good public policies. This represents **a signal that diversification, entrepreneurship and innovation are possible in the Caribbean region** when the private and the public sector can work well together;
- ② **New skilled jobs** could be expected in these dynamic clusters and this can help to address the brain drain;
- ③ In clusters, **external connections**, through multinationals or within global value chains, are key to export, to access knowledge and acquire capabilities needed for being competitive in the international markets;
- ④ Existing dynamic clusters do represent very good examples of what can be achieved at the collective level, thanks to external economies and joint actions, now the challenge is **to extend the approach at an intra-Caribbean scale, with an open eye for key external connections.**

PROJECTS IN EXECUTION: 91

PROJECTS IN PIPELINE: 14

RESPONDING TO 10 REGIONAL CHALLENGES:

By Numbers:

- ✓ 13 National Private Sector Development Strategies
- ✓ 22 PSD Institutions Strengthened
- ✓ 13 Multi-Donor Action Plans under Implementation / Projects Developed
- ✓ 22 Public-Private Dialogue Events
- ✓ 43 Cluster Competitiveness Improvement Plans and innovative Business Plans developed

Trade Facilitation/Export Diversification
Investment Promotion
Access to Finance
Logistics and Connectivity
Public-Private Dialogue

Environment/Conservation
Gender (Women/Youth)
Regional Integration
Small/Medium Enterprises
Business Climate Enhancement

29 PROJECTS HAVE REGIONAL SCOPE

15 COUNTRIES REPRESENTED



In partnership with

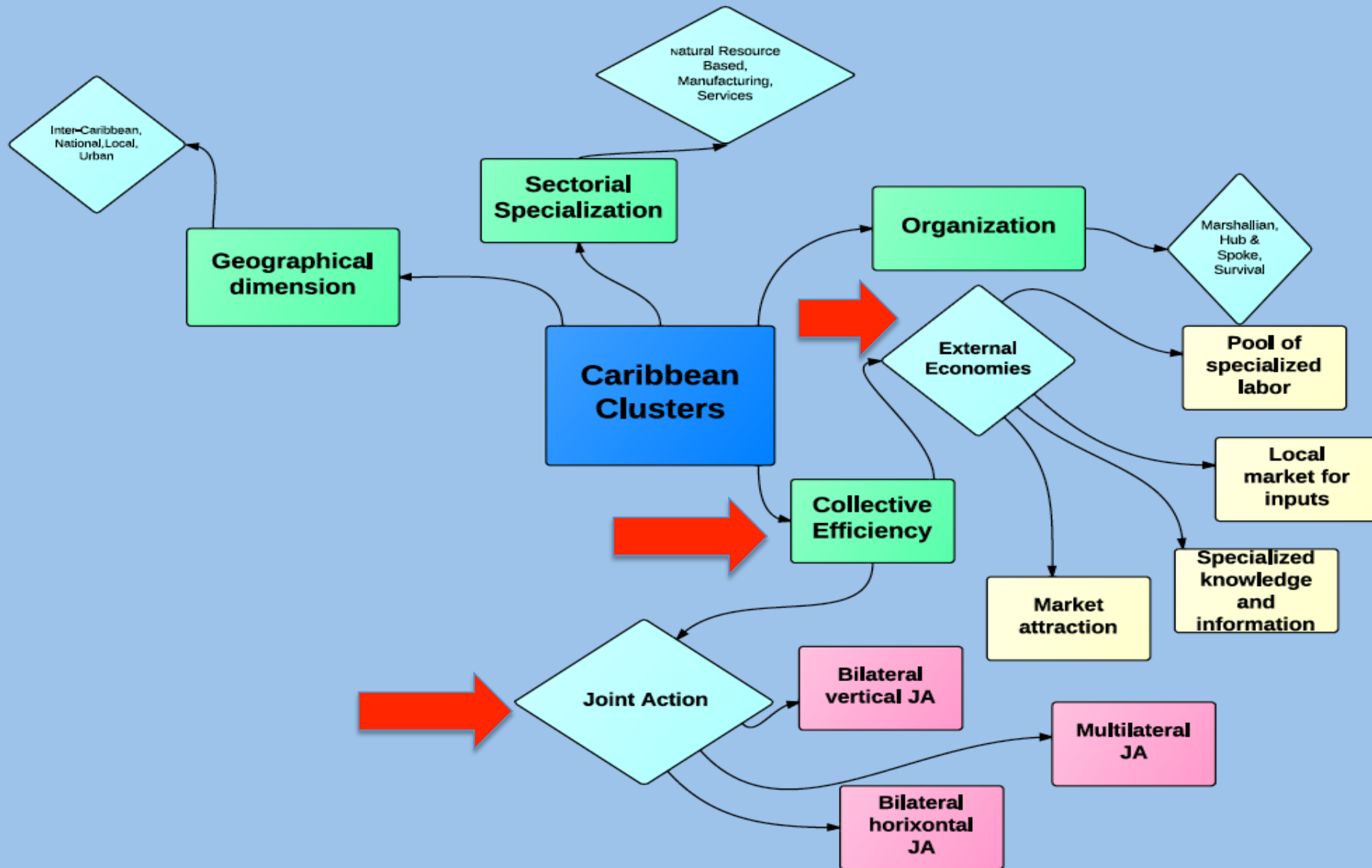


Thank you

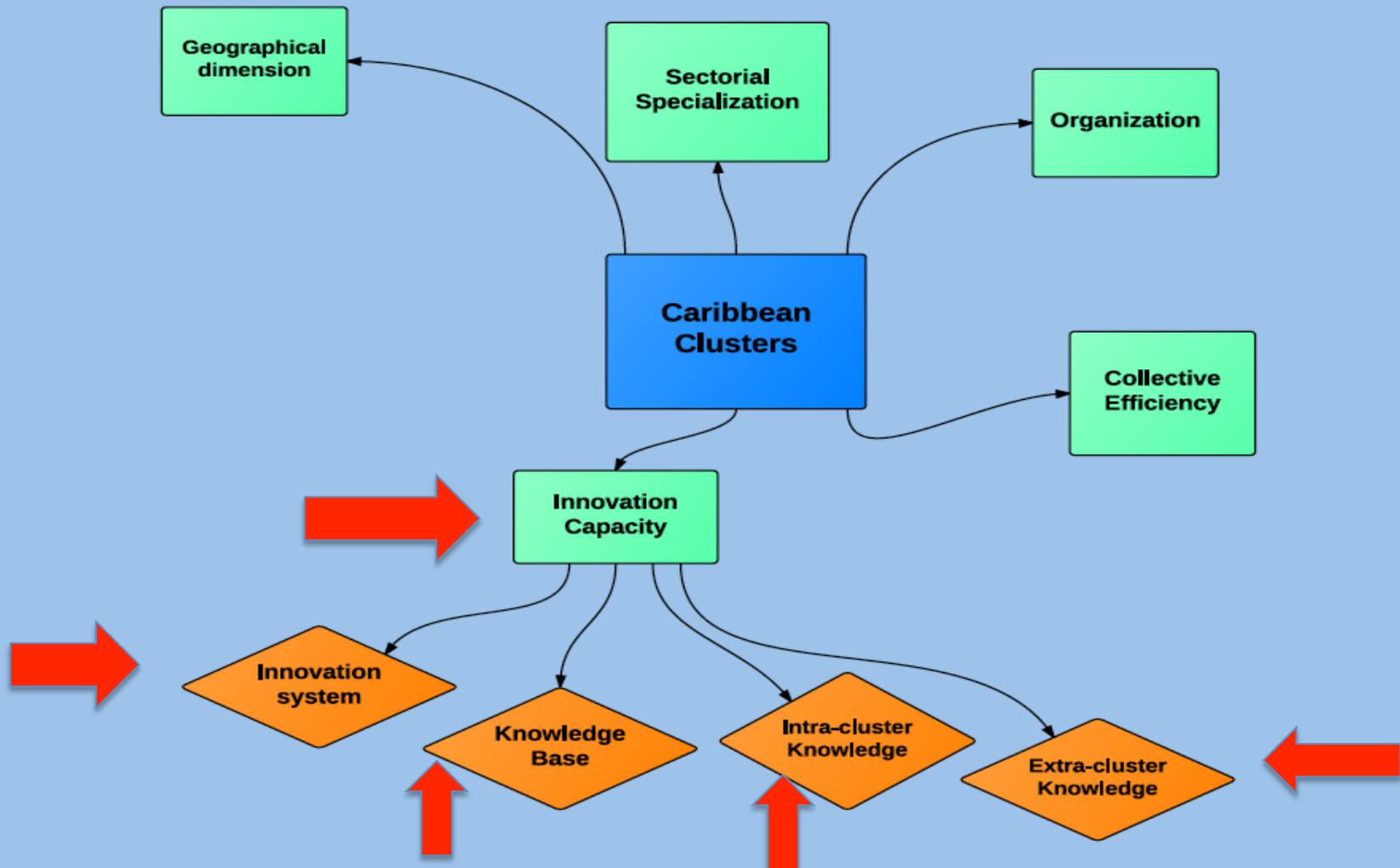
roberta.rabellotti@gmail.com

<http://robertarabellotti.it>

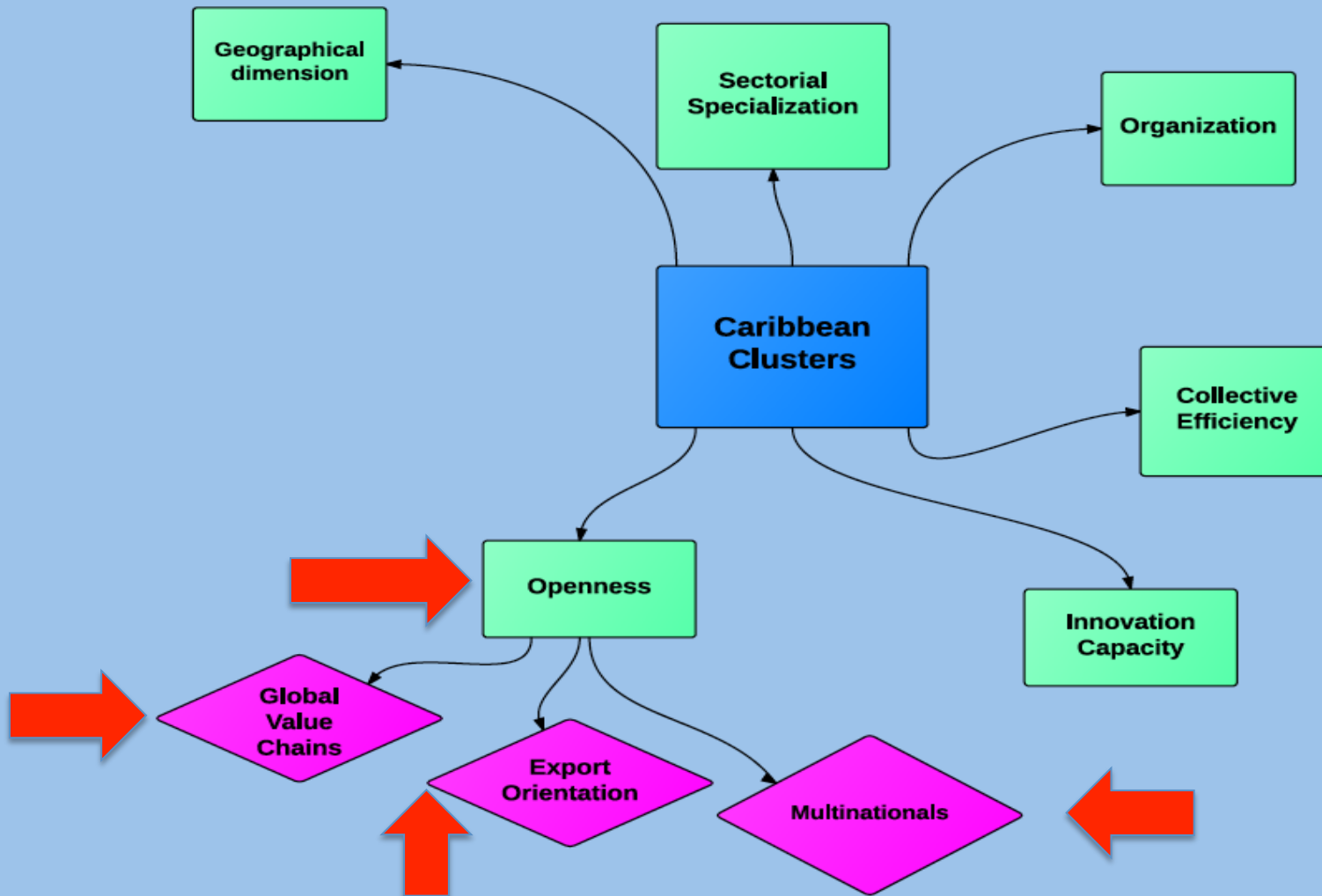
Collective efficiency



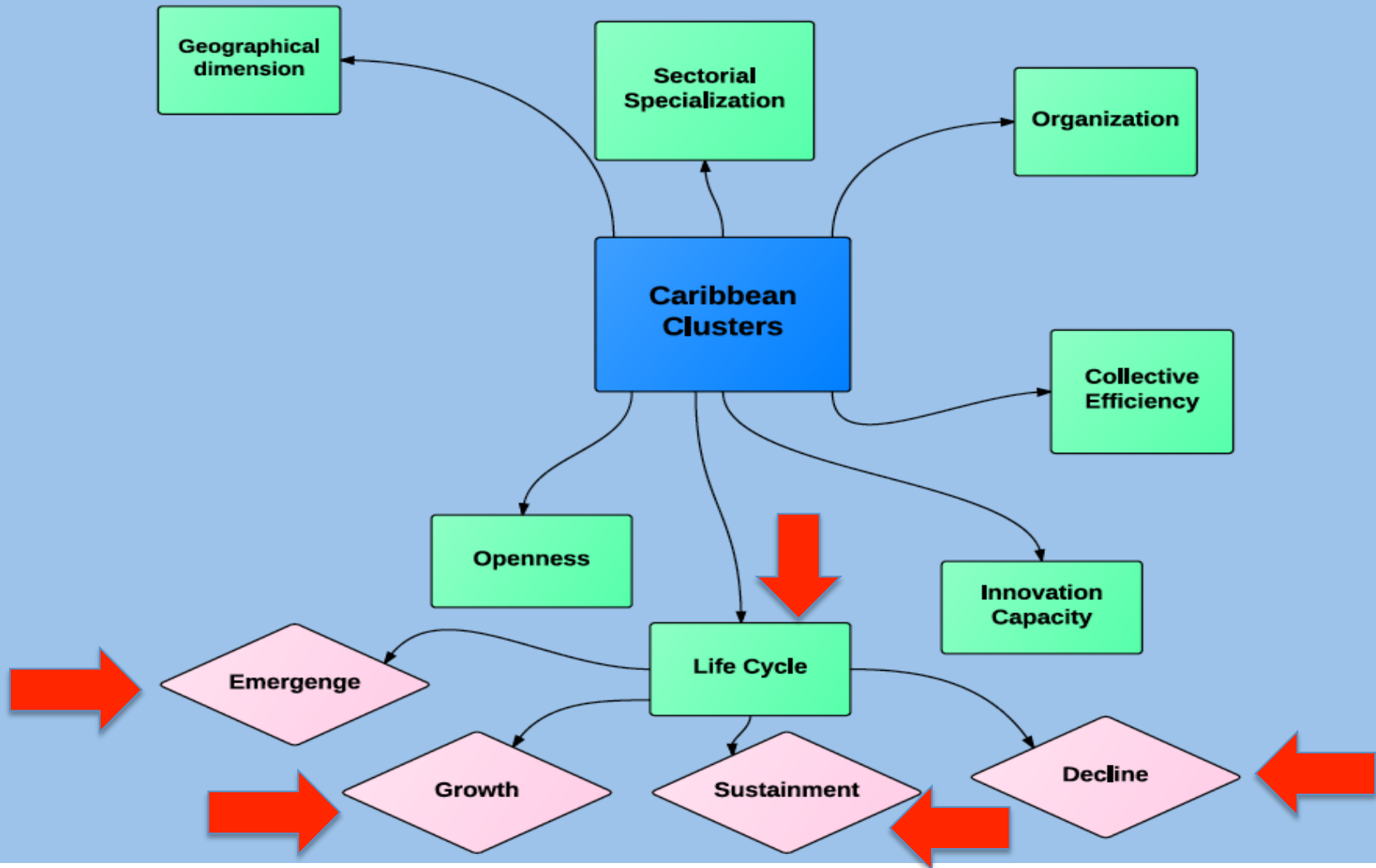
Innovation capacity



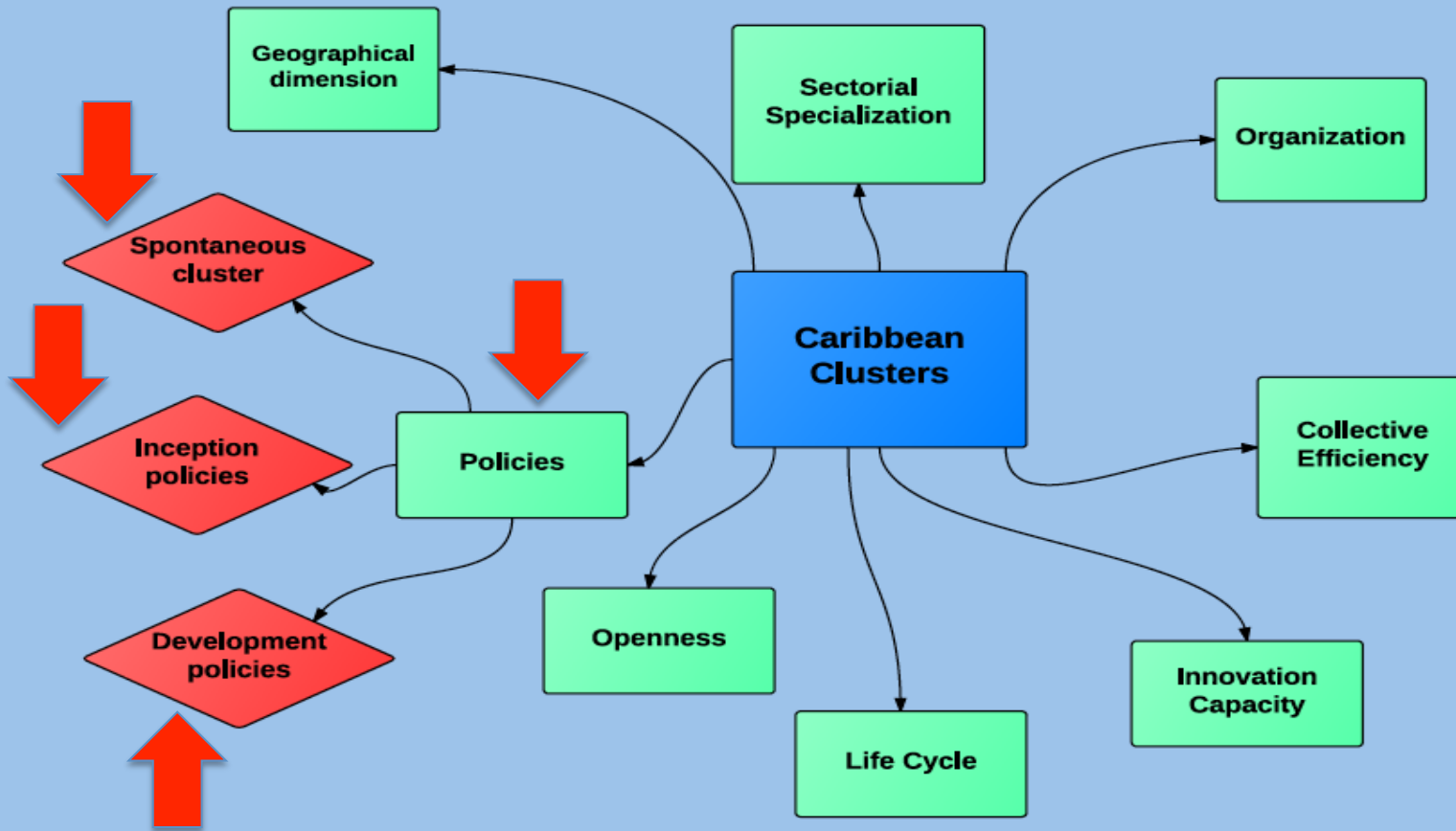
Openness



Cluster Life Cycle



Cluster Policies



The main findings in a table

Clusters	Geographical Dimension	Cluster Organization	Collective efficiency		Innovation Capacity	Openness	Stage of the Life Cycle	Cluster Policy
NATURAL RESOURCE BASED			EE	JA				
Agriculture								
• Guyana (Non-traditional agriculture)	N	H&S	M	M/H	M	O	G	I
• Grenada (Nutmeg)	N	M	L/M	M	L/M	S-O	G	S
• T&T (Agro products in Felicity)	L	M	M	M/H	L/M	C	G	I/D
• T&T (Agro products in Jemingham)	L	M	M	L/M	L/M	C	G	I
Agro-processing								
• Guyana (Coconut Water)	L & I-C	H&S	M	H	L/M	O	G	D
• T&T (Food Sustainability)	N	M	H	H	M	C	G	D
Forestry								
• Guyana (Forestry and wood products)	N	M	L/M	L	M	O	G	D
Aquaculture								
• Guyana (Aquaculture)	N	M	M	M/H	M/H	C/O	G	I/D
• Belize (Shrimp)	N	M	H	M/H	M	S-O	G	D
• Jamaica (Ornamental Fish)	U	H&S	M	M/H	M	S-O	E	S/D
Energy								
• T&T (Oil and gas prod. and services)	N	M	H	H	H	O	S	S/D
• T&T (Point Lisas Industrial Estate)	L	M	H	M/H	M/H	O	G	I/D
MANUFACTURING								
• Guyana (Gold Jewelry)	N	M	M	L	L/M	C	S	S
• Various countries (Rum)	I-C	M	L/M	H	M	O	S	D
SERVICES								
Tourism								
• Guyana (Fishing in North Rupunini)	L	M	L	H	L	S-O	G	I
• Guyana (Birding)	N	M	M	M	M	O	E	I
• T&T (Tourism in Carapichaima)	L	M	L/M	L	L/M	C/O	E	D
• T&T (Tourism)	N	M	M	L/M	L	S-O	S	D
• Jamaica (Treasure beach)	L	M	L/M	M/H	L	S-O	E	S/D
• Grenada (Geo-tourism)	N	M	L	M	M	O	G	D
• Suriname (Upper Suriname River Area)	L	M	M	M	L/M	S-O	E	S/D
Creative Industries								
• Various countries (Animation industry)	I-C	M	L/M	M	L/G	C/O	E	D
• Barbados (Multimedia)	N	H&S	M	M/H	M/G	O	E	S
• T&T (Music, film, Camaval etc.)	N	M	H	M	H	O	G	D
• T&T (Pottery)	L	S	L	M	L	C	D	S
Other Services								
• T&T (Maritime services)	N	M	M	H	H	S-O	G	D
• T&T (Financial services)	U	M	H	M/H	H	O	S	D
• T&T (Business services)	U	M	H	L/M	H	S-O	G	S
• T&T (Retail)	U	M	M	M/H	L	C	S	S
• Jamaica (ICT/business services)	N	M	H	M/H	M/H	S-O	G	S/D
• Jamaica (Printing and Packaging)	N	M	M	M	M/H	S-O	G	S/D
• Various countries (Maritime services)	I-C	H&S	M	M	M	O	G	D

How to measure the 6 cluster dimensions

Dimension	Measure	Synthetic indicator
Cluster structure		
i) Sectoral specialization	Qualitative	
ii) Geographical dimension	Qualitative	
iii) Organization	Qualitative	
Collective efficiency	Low, Low/Medium, Medium, Medium/High, High	Average Value
iv) External economies v) Joint Action		
Innovation Capacity	Low, Low/Medium, Medium, Medium/High, High	Average Value
vi) Knowledge base vii) Intra-cluster knowledge viii) Extra-cluster knowledge ix) Innovation System		
Openness		
Export orientation	Absent, Low, Growing, Medium, High	Closed, Closed-Opening, Semi-Open, Open
Multinationals	Yes, No	
Global Value Chains	Yes, No	
Stage of Life Cycle		
Size of clusters	# of actors involved	Emergence, Growth, Sustainment, Decline
System's characteristics	Degree of joint action (see CE)	
Existence of open networks and channels for accessing external knowledge	See Openness	